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EXAMINER

LUM, LEON YUN BON

ART UNIT	PAPER NUMBER
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1641

DATE MAILED: 12/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/689,738

Applicant(s)

NICOLAU ET AL.

Examiner

Leon Y Lum

Art Unit

1641

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-54 is/are pending in the application.
- 4a) Of the above claim(s) 24-38 and 43-54 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 and 39-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 20041202.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I, claims 1-23 and 39-42 in the reply filed on 04 November 2004 is acknowledged and has been entered.

Claim Rejections - 35 USC § 112

2. Claims 1-23 and 39-42 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. In claims 1 and 39, line 2 of claim 1 and line 3 of claim 39, the term "substantially" is vague and indefinite. The specification does not define the term and it is unclear what type of non-ablatable material (lines 2-3 of claim 1 and lines 3-4 of claim 39) is claimed.
4. In claim 2, lines 2-3, the phrase "at least two localized areas having molecule-adsorbing capacities for molecules with different adsorbing properties" is vague and indefinite. It is unclear whether the molecules with different adsorbing properties are within one of the at least two localized areas, or if each of the at least two localized

areas has one type of molecule that has a different adsorbing property from another type of molecule in a different localized area.

5. In claim 4, line 2, the term "informationally-addressable" is vague and indefinite. The specification does not define the instant term and it is unclear as to how the term limits the pattern (line 2).

6. In claims 21-22, line 2 of the claims, the term "sub-microns" is vague and indefinite. The specification does not define the term and it is unclear what the lower limit is for the claimed range (line 2 of the claims).

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-5, 15-16, 20, and 39-42 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Brizzolara (US 5,858,801).

In the instant claims, Brizzola reference teaches an array comprising a micro-structure which comprises a first layer comprising a molecule-adsorbing, substantially non-ablatable material, and a second layer of ablatable material, wherein the second

layer is disposed on the first layer and a plurality of portions of the second layer have been ablated to expose a surface of the first layer and thereby form a plurality of profiled features, and at least one biomolecule adsorbed on the surface of the first layer in at least one of the plurality of profiled features, by disclosing an analyte capturing structure comprising an antibody-adsorbent substrate, wherein each of two or more antibodies are adsorbed at a specific site onto the substrate, with antibody-resistant material covering the substrate between the adsorbed molecules of the antibodies (column 2, lines 34-42), wherein the antibody-resistant material is coated onto the antibody-adsorbent substrate and portions of the antibody-resistant material are removed to produce bare sites on the antibody-adsorbent substrate having precise sizes, shapes, and locations, prior to adsorbing molecules of antibodies on to the bare site onto the bare sites (column 2, lines 4-33, especially lines 20-33).

With regards to claims 2 and 41-42, Brizzolara reference teaches that the exposed surface of the first layer comprises at least two localized areas having molecule-adsorbing capacities for molecules with different adsorbing properties (claim 2), that each of the plurality of profiled features has a different biomolecule adsorbed on the surface of the first layer (claim 41), and that the biomolecule is an antibody (claim 42), by disclosing that each of two or more antibodies are adsorbed at specific sites on the substrate, as stated above (column 2, lines 34-42). One of ordinary skill in the art would recognize that different antibodies have different adsorption properties.

With regards to claims 3-4, Brizzolara reference teaches that a plurality of portions of the second layer have been ablated to form a plurality of profiled features

(claim 3) and wherein the plurality of profiled features form an informationally-addressable pattern (claim 4), by disclosing that portions of the antibody-resistant material are removed to produce bare sites having a precise location which corresponds to a specific antibody (column 2, lines 23-27).

With regards to claim 5, Brizzolara reference teaches that the first layer is a polymeric material (claim 5), by disclosing that the antibody-adsorbent substrate may be composed of any material conventionally used to physically adsorb proteins or antibodies, including polystyrene (column 4, lines 1-9).

With regards to claims 15-16, Brizzolara reference teaches that the structure further comprises a blocking layer disposed on the surface of the second layer (claim 15), wherein the blocking layer is an inert protein (claim 16), by disclosing a second coating of antibody-resistant coating on the substrate that is added in a blocking procedure, after adsorption of a layer of antibody (column 3, lines 10-21), wherein the antibody-resistant coating is composed of a material which is resistant to antibody (protein) adsorption and which can be etched away in high yield and resolution by using ion beam sputtering or ablated away by a laser beam, and includes bovine serum albumin (column 4, lines 13-41, especially lines 13-19).

With regards to claim 20, Brizzolara reference teaches that the profiled feature is a micro-well, by disclosing that a top antibody-resistant material is placed on top of a bottom antibody-adsorbent surface, wherein portions of the top material are removed and sites on the bottom surface are exposed, as stated above (column 2, lines 20-33), wherein the sites are spots (column 3, lines 50-53).

With regards to claim 40, Brizzolara reference teaches that each of the plurality of profiled features has the same biomolecule adsorbed on the surface of the first layer, by disclosing multiple sites on the analyte-capturing structure, as stated above (column 2, lines 4-33), and since patterning of multiple antibodies can be performed in a parallel process by ablating multiple spots simultaneously and then depositing an antibody by ink jet printing (column 3, lines 45-67), the structure is capable of having the same antibody deposited in multiple areas after ablation since the ink jet printer is capable of containing only one type of antibody.

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

10. Claims 1-23 and 39-42 are rejected under 35 U.S.C. 102(a) as being clearly anticipated by Ivanova et al (Langmuir, 2002, vol. 18, pp. 9539-9546).

In the instant claims, Ivanova et al reference teaches an array comprising a micro-structure which comprises a first layer comprising a molecule-adsorbing, substantially non-ablatable material, and a second layer of ablatable material, wherein the second layer is disposed on the first layer and a plurality of portions of the second layer have been ablated to expose a surface of the first layer and thereby form a plurality of profiled features, and at least one biomolecule adsorbed on the surface of the first layer in at least one of the plurality of profiled features, by disclosing a laser-

fabricated polymer surface with patterned fluorescently labeled proteins, wherein the top layer is ablatable and is above a transparent, protein adsorbing polymer layer and a glass substrate, and a well is created by laser ablation (page 9540, left column, last paragraph to page 9541, left column, 1st paragraph; and Figure 1 and caption), wherein the surface includes first, second, and third biomolecules (Figure 2 and caption).

With regards to claims 2-4, Ivanova et al reference teaches that the exposed surface of the first layer comprises at least two localized areas having molecule-adsorbing capacities for molecules with different adsorbing properties (claim 2), that a plurality of portions of the second layer have been ablated to form a plurality of profiled features (claim 3), wherein the plurality of profiled features form an informationally-addressable pattern (claim 4), by disclosing several IgGs and control proteins deposited on the surface in multiple wells (page 9451, right column, 3rd full paragraph, lines 4-7; and Figure 2 and caption), and information is encoded through a combination of vertical lines in a "bar code", "informationally addressable" mode (page 9542, right column, 1st paragraph, lines 5-11).

With regards to claims 5-14, Ivanova et al reference teaches that the first layer is a polymeric material (claim 5), the exposed surface of the polymeric material has localized areas which have diverse surface properties (claim 6), wherein the exposed surface of the polymeric material has localized areas which are hydrophobic or hydrophilic (claim 7), that the first layer comprises polymethylmethacrylate (claims 8-10), the localized areas form a predetermined pattern on the surface of the first layer (claim 11), and that the second layer is Au (claims 12-14), by disclosing a protein-

blocked thin gold layer deposited on a poly(methyl methacrylate) film (abstract, lines 2-4) and a hydrophilic rim at the edges of ablated areas guarded by thinner hydrophobic stripes (page 9542, left column, 1st paragraph; and Figure 4 and caption).

With regards to claims 15-19, Ivanova et al reference teaches that the structure further comprises a blocking layer disposed on the surface of the second layer (claim 15), wherein the blocking layer is inert proteins (claim 16), a substrate that supports the first and second layers (claim 17), wherein the substrate is glass (claim 18), and wherein the substrate is part of an apparatus (claim 19), by disclosing by disclosing a protecting protein layer of BSA on top of the gold film, wherein the gold film is on top of a protein absorbing layer that is on top of a glass substrate (Figure 1 and caption), and wherein a microassay fabricated by the layers and substrate can be used to identify different proteins (abstract, lines 15-16).

With regards to claims 20-21, Ivanova et al reference teaches that the profiled feature is a micro-well or a micro-channel (claim 20), wherein the micro-wells have a diameter in the range of sub-microns to 50 μm (claim 21), by disclosing microwells with diameters of 5-20 μm , 1-5 μm (abstract, line 9).

With regards to claims 40-42, Ivanova et al reference teaches that each of the plurality of profiled features has the same biomolecule adsorbed on the surface of the first layer (claim 40), each of the plurality of profiled features has a different biomolecule adsorbed on the surface of the first layer (claim 41), and that the biomolecule is an antibody (claim 42), by disclosing anti-chicken IgG deposited on a Au-PMMA bilayer in a "bar code" pattern with different deposition repetitions and writing speeds (Figure 5

and caption), that the surface includes first, second, and third biomolecules (Figure 2 and caption), wherein the biomolecules are antibodies (page 9545, left column, 1st full paragraph).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. Claims 6-7 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brizzolara (US 5,858,801) in view of Wohlstadter et al (US 6,066,448).

Brizzolara reference has been disclosed above, but fails to teach that the exposed surface of the polymeric material has localized areas which have diverse surface properties (claim 6), wherein the properties are hydrophobic or hydrophilic (claim 7), and wherein the localized areas form a predetermined pattern on the surface of the first layer (claim 11), by disclosing patterned hydrophilic/hydrophobic regions of hydrophobic binding domains surrounded by hydrophilic regions, in order to prevent the spreading of applied fluids or gels such that the spread or wetting of a fluid or gel sample applied to the binding domains is controlled (column 17, lines 17-49).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Brizzolara with patterned hydrophilic/hydrophobic regions of hydrophobic binding domains surrounded by hydrophilic regions, as taught by Wohlstadter et al, in order to prevent the spreading of applied fluids or gels such that the spread or wetting of a fluid or gel sample applied to the binding domains is controlled. One of ordinary skill in the art at the time of the invention would have reasonable expectation of success in including a combination of hydrophobic and hydrophilic regions, as taught by Wohlstadter et al, in the device of Brizzolara, since

Brizzolara teaches an array of binding regions on substrates that can bind to different analytes, and the hydrophobic/hydrophilic regions taught by Wohlstadter are applied to binding regions and would prevent analytes in different solutions from spilling into adjacent binding regions.

15. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brizzolara (US 5,858,801) in view of Slovacek et al (US 5,340,715).

Brizzolara reference has been disclosed above and additionally teaches optical techniques to determine captured molecules (column 5, lines 1-17), but fails to teach that the first layer is polymethylmethacrylate (claims 8-10).

Slovacek et al reference discloses a PMMA surface, in order to provide a suitable surface for binding of a reactant coating since PMMA has optical purity and enables antibodies and other proteins to be attached to the surface simply by bringing them in contact with the PMMA (column 6, lines 60-67).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Brizzolara with a PMMA surface, as taught by Slovacek et al, in order to provide a suitable surface for binding of a reactant coating since PMMA has optical purity and enables antibodies and other proteins to be attached to the surface simply by bringing them in contact with the PMMA. One of ordinary skill in the art at the time of the invention would have reasonable expectation of success in using PMMA as a substrate to bind antibodies, as taught by Slovacek et al, in the device of Brizzolara, since Brizzolara teaches that antibody adsorption to the substrate

should be a physical process and also teaches detection methods to determine the presence of captured molecules, and the PMMA surface taught by Slovacek et al is one example of a surface that allows adsorption of antibodies to the surface, and also provides optical purity that won't interfere with optical detection means.

16. Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brizzolara (US 5,858,801) in view of Sheppard, Jr. et al (US 6,143,247).

Brizzolara reference has been disclosed above and additionally teaches optical techniques to determine captured molecules (column 5, lines 1-17), but fails to teach that the second layer is a metal that can be deposited in a thin layer (claim 12), wherein the second layer is Au (claims 13-14).

Sheppard, Jr. et al reference teaches a substrate that is partially coated with a specific binding reagent and with a patterned reflective material that is derivatized with a blocking agent (column 8, lines 4-8; and Figure 1C), wherein the reflective layer is gold metal (column 17, lines 5-7) and can be etched (column 11, lines 64-66), in order to provide a pattern of reflective coatings that are used to orient, digitize and quantitate particles contained within a defined area of a platform (column 16, lines 66 to column 17, line 4) by using optical elements to focus and track a central beam using reflections of sides beams off of the reflective features to detect bound particulates (column 22, lines 27-32).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Brizzolara with a substrate that is partially coated with

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a specific binding reagent and with a patterned reflective material that is derivatized with a blocking agent, wherein the reflective layer is gold metal and can be etched, as taught by Sheppard, Jr, et al, in order to provide a pattern of reflective coatings that are used to orient, digitize and quantitate particles contained within a defined area of a platform by using optical elements to focus and track a central beam using reflections of sides beams off of the reflective features to detect bound particulates. One of ordinary skill in the art at the time of the invention would have reasonable expectation of success in applying a gold metal layer as taught by Sheppard, Jr. et al, to the device of Brizzolara, since Brizzolara teaches a substrate with a top layer that is composed of a material that can be etched away and also teaches optical detection methods, and the gold layer taught by Sheppard, Jr. et al is one example of a material that can be etched and provides a method of performing optical detection while focusing and tracking a central beam.

17. Claims 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brizzolara (US 5,858,801) in view of Kris et al (US 6,238,869 B1).

Brizzolara reference has been disclosed above, but fails to teach that a substrate supports first and second layers (claim 17), wherein the substrate is glass (claim 18), and wherein the substrate is part of an apparatus (claim 19).

Kris et al reference discloses a surface comprising a plurality of spatially discrete regions, wherein the surface is a flat surface made of glass, has a layer of polymer such as PEG and an overlaying structure that delineates the discrete regions (column 5, lines

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3-8 and lines 41-46; and column 5, line 66 to column 6, line 8), and wherein the surface is detected using a charge-coupled device, in order to provide an apparatus for concurrently performing multiple biological or chemical assays, and allows for high throughput analysis of multiple samples using repeated arrays of probes (column 1, lines 13-16 and 49-60; column 34, lines 48-55; and Figures 2 and 5a-5c), wherein the probes are antibodies or proteins (column 4, lines 41-64, especially lines 59-60).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Brizzolara with a surface comprising a plurality of spatially discrete regions, wherein the surface is a flat surface made of glass, has a layer of polymer such as PEG and an overlaying structure that delineates the discrete regions, and wherein the surface is detected using a charge-coupled device, as taught by Kris et al, in order to provide an apparatus for concurrently performing multiple biological or chemical assays, and allows for high throughput analysis of multiple samples using repeated arrays of probes. One of ordinary skill in the art at the time of the invention would have reasonable expectation of success in using a glass surface to provide multiple arrays, as taught by Kris et al, in the device of Brizzolara, since Brizzolara teaches arrays with antibodies as capture agents, and the surface of Kris et al, includes multiple layers on top of the surface that contain antibody probes.

18. Claims 20 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brizzolara (US 5,858,801) in view of Wilding et al (US 5,587,128).

Brizzolara reference has been disclosed above, but fails to teach that the profiled feature is a micro-channel (claim 20), the micro-channels have a width in the range of sub-microns to 50 μm (claim 22), and the micro-channels have a length in the range of 5 to 200 μm (claim 23).

Wilding et al reference teaches flow channels that have a cross-sectional dimension between 0.1 μm and 1,000 μm , and a width or depth on the order of about 2.0 to 500 μm , in order to connect two or more reaction chambers and to serve as access ports, inlet/outlet ports and/or vents (column 4, lines 24-26 and 37-42), wherein the channels contain binding moieties such as labeled antibodies (column 22, lines 13-18).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Brizzolara with flow channels that have a cross-sectional dimension between 0.1 μm and 1,000 μm , and a width or depth on the order of about 2.0 to 500 μm , as taught by Wilding et al, in order to connect two or more reaction chambers and to serve as access ports, inlet/outlet ports and/or vents. One of ordinary skill in the art at the time of the invention would have reasonable expectation of success in including flow channels, as taught by Wilding et al, in the device of Brizzolara, since Brizzolara teaches reaction wells with immobilized antibodies, and the channels taught by Wilding et al connect reaction chambers and the channel surfaces include the ability to immobilize antibodies.

19. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brizzolara (US 5,858,801) in view of Clark et al (US 4,802,951).

Brizzolara reference has been disclosed above, but fails to teach that micro-wells have a diameter in the range of sub-microns to 50 μm .

Clark et al reference discloses an array of pits etched in a selected number of layers of a substrate (column 11, lines 50-56; and Figures 8A-B), wherein the arrays have an overall diameter of 0.1 and 1 micron (column 4, lines 41-44; and Figure 1), in order to provide nanometer scale devices for high density and to obtain physical effects not obtainable for larger size devices (column 1, lines 14-27), wherein antibody molecules can be immobilized inside the holes formed by the array (column 14, lines 53-56; and Figure 6H), and wherein the substrate can be coated to provide binding of the array to the substrate (column 6, lines 1-3). Since the holes in the array have a diameter between 0.1 and 1 micron, and the pits are etched in locations that correspond to the array holes, the pits also have the same dimensions as the holes.

It would have been obvious to modify the device of Brizzolara with an array of pits etched in a selected number of layers of a substrate, wherein the arrays have an overall diameter of 0.1 and 1 micron, as taught by Clark et al, in order to provide nanometer scale devices for high density and to obtain physical effects not obtainable for larger size devices. One of ordinary skill in the art at the time of the invention would have reasonable expectation of success in including pits with a diameter between 0.1 and 1 micron, as taught by Clark et al, in the device of Brizzolara, since Brizzolara

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teaches substrates with layers that can be etched, and selected layers in the substrate taught by Clark et al can also be etched.

Conclusion

20. No claims are allowed.

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leon Y Lum whose telephone number is (571) 272-2878. The examiner can normally be reached on 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on (571) 272-0823. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Leon Y Lum
Patent Examiner
Art Unit 1641



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12/10/07